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THE REVIEW

DEVOTED TO THE INTERESTS OF THE AMERICAN SOCIETY FOR STEEL TREATING

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EASTERN CHAPTERS WILL JOIN MAY 15

Four Chapters, Many Guests to Assemble in Philadelphia

Final plans for the third annual Eastern Group chapter meeting on May 15, 1931, have been completed. The members of the Lehigh Valley, New Jersey, New York and Philadelphia chapters are planning to spend a very interesting day in Philadelphia where they will convene this year.

The technical session which is to begin at 10:30 A. M. will be of special interest. Dr. F. C. Langenberg and S. B. Clark are presenting a paper on "The Centrifugal Processes of Pipe Making".

Another feature of the day will be a trip through the Navy Yard at Philadelphia. Due to the fact that so many different phases of work are carried on there, every member should find plenty to interest him. The places of special interest will be the Naval Aircraft Factory and the Airplane hangars.

The complete program for the day is as follows:

10:00 A. M.—*Registration* — Penn Athletic Club, 18th and Locust Sts.

10:30 A. M.—*Technical Session* — Address—"The Centrifugal Processes of Pipe Making"—by Dr. F. C. Langenberg and S. B. Clark, of the United States Cast Iron Pipe and Foundry Co.

NOON—*Luncheon*—As guests of Philadelphia Electric Co. at Penn Athletic Club. Address by Geo. Whitwell, of Philadelphia Electric Co.

1:30 P. M.—*Plant Inspection* — Philadelphia Navy Yard, Naval Aircraft Factory, Airplane Hangar, Forge and Treatment Shops. Ships in repair and storage.

6:00 P. M.—*Dinner*—Penn Athletic Club. Address by Gabriel Heatter, Editor of "The Shaft", published by Edgar T. Ward's Sons Co.

8:30 P. M.—Adjournment.

All of the national officers will be at the meeting.

The members from the four chapters are arranging to attend the meeting by means of busses. However, any member of the Society is welcome and is requested to make reservations through A. O. Schaefer, the Midvale Co., Philadelphia, Pa.

NORTHWEST ENJOYS 3 WESTGREN TALKS

Noted Scientist Gives Talk at University of Minnesota

By A. C. Forsyth

The Northwest chapter, in cooperation with local sections of the American Chemical Society, the American Society of Mechanical Engineers and the University of Minnesota, was fortunate to be able to hear Dr. Arne Westgren during his recent visit to this country.

Dr. Westgren is professor of general and inorganic chemistry at the University of Stockholm and is recognized as the leading authority on crystal structure throughout the world.

Dr. Westgren gave three lectures during his stay in Minneapolis. The first covered "The Crystal Structure of Ordinary and Alloyed Steels." In this lecture the speaker gave a survey of the field of research on crystal studies, particularly that concerning the patterns of iron and the structure of carbides. He also discussed the patterns obtained from quenched specimens as well as those taken at high temperatures.

The second lecture was the "Structure Analogies of Alloys," and the third was "Crystal Structure and Atomic Properties of Alloys Containing Transition Elements." These two lectures summed up the results of an exhaustive study of a great many different alloys.

It was found that when alloys form the same type of structure the ratio of total valence electrons to the fotal number of atoms was the same. Transition elements such as Fe, Co and Ni, however, behave as if their valence was zero.

The complete series of lectures was particularly well attended.

Prominent At New England's Meeting

Left to Right—Front Row: V. O. Homerberg; W. H. Eisenman; R. G. Guthrie; A. O. Fulton; W. B. Coleman; E. W. Page; H. I. Moore. Back row: D. A. Nemser; H. J. Fischbeck; J. Allison; R. M. Bird; E. F. Cone; A. H. d'Arcambal.

PHILA. SUSTAINING MEMBERS HONORED

Chapter Head and W. W. Leffler Speak at March 27 Meeting

By Adolph O. Schaefer

The March meeting of the Philadelphia chapter held on Friday, March 27 at the Engineers' Club, was set aside as Sustaining Members Night. All of the thirty-five sustaining members of the chapter were invited to send representatives to the dinner preceding the meeting. About twenty accepted and a large speakers' table was set for them and the Executive Committee.

Following the dinner, which was the best attended this year, Chairman Peterson delivered a short talk in which he recalled to the members the debt of gratitude due those who bear the brunt of our financial burden. Many of these companies have been Sustaining Members since the chapter was chartered

The speaker of the evening was W. W. Leffler, metallurgist of the Republic Steel Corp., Central Alloy Division, Massillon, Ohio. Mr. Leffler read a most interesting paper of "Carburizing Steels and Carburizing."

After listing and describing all of the various alloys used for making parts subjected to this type of treatment, Mr. Leffler dwelt on the special characteristics and uses of each.

The precautions to be observed and the rules to follow in the process of carburizing were described. The paper was a complete resume of the subject, the data given were full and complete, and there was considerable interest manifested.

The long discussion following the reading of the paper was conducted by Harry Parkison of the Nice Ball Bearing Co. Hugh Rodman of the Rodman Chemical Co. spoke on carburizing substances. Ellwood Griest of the Philadelphia Gas Works spoke on gas carburizing. A new method of carburizing, using "Carbinol" was explained by Mr. Hayden of the Hevi Duty Electric Furnace Co. Mr. Thomas of Philfuels talked on the use of butane.

TO STUDY GAS ENGINEERING

A short course in industrial gas engineering will be held at the University of Illinois, June 15-20, 1931. The course is under the direction of the University of Illinois.

Professor D. B. Keyes will preside over the course, which is sponsored by the Illinois Gas Association. The course will be unusually extensive despite its brevity, according to A. D. Frydendahl of the Peoples Gas Light & Coke Co., Chicago, from whom details may be obtained.

PYROMETER INSTRUMENT CO. MOVES

The Pyrometer Instrument Co. has moved to new offices and laboratories at 103 Lafayette St., New York. The new quarters provide larger and better facilities for service.

BOSTON SHOW SPACE IS TWO-THIRDS SOLD

More Papers Already Offered for Congress than Ever Before

Reservations for space in the 1931 National Metal Exposition totalled 37,000 square feet on May 1, two thirds of the space available in the Commonwealth Pier at Boston where the show will be held the week of September 1. This amount of space has been reserved only by previous exhibitors in the Expositions, since floor plans and contract blanks were not distributed to the general list of prospects until May 4.

More than 130 companies have sent in their reservations and many of them have made substantial increases in the usual size of their booths. Only four have reduced their space as compared with their reservations in former years.

Sixty-five papers have been submitted to the Publication Committee by authors who wish to present them at the technical sessions of the National Metal Congress. This large number, the greatest ever received, includes contributions from internationally famed metallurgists and indicates that an unusually interesting program will be on tap.

One whole session will be devoted to papers relating to problems connected with the manufacture and fabrication of sheet steel, another will cover the subject of melting. There will also be a session on nitriding. In all, nine sessions are scheduled and in every one a number of very valuable papers will be presented to the leaders of the metal industry who will be in Boston for both the Congress and Exposition.

The morning technical sessions will be held in the Hotel Statler, official headquarters of the Congress. Afternoon sessions will convene in the several meeting rooms of Commonwealth Pier.

SOURCE OF A.S.S.T. PAPERS

Pittsburgh Heads List by Contributing 10 of the 53 Papers Published in 1930

An interesting tabulation of the technical papers published by the A. S. S. T. from June, 1930, to date has just been prepared for the information of President J. M. Watson of the Society. This tabulation does not include papers published in *Metal Progress*, but covers only the papers published in Vol. XVIII of *Transactions* and two papers otherwise preprinted.

The table shows the origin of the 53 papers thus included arranged by chapters. The Pittsburgh chapter contributed more than any other, the table shows:

Pittsburgh	10	New Haven	2
New York	6	Philadelphia	2
Washington-Balto	6	Boston	1
Cleveland	5	Buffalo	1
Detroit	4	Los Angeles	1
Schenectady	4	Lehigh Valley	1
Chicago	3	Northwest	1
Canton-Massillon	2	New Jersey	1
International	2	Notre Dame	1

OVER 700 ATTEND EVENTS OF NEW ENGLAND SECTIONAL MEETING IN HARTFORD APRIL 14

Seventeen Chapters Represented in the Crowds Attending the Day-long Program of Educational Activities

At the New England Spring Sectional Meeting in Hartford on April 14 over 700 members and guests gathered for a full-day program of technical papers, plant visitations, and dinner entertainment. A perfect spring day, a day off from the job after a trying winter, and a splendid program conspired to make this a most successful event. Six hundred attended the two technical sessions in the morning, a hundred more joined the plant inspection trips in the afternoon, and 520 stayed for the dinner and splendid talk by Dr. Zay Jeffries. The entire crowd seemed to appreciate the program.

Of the members registered, 97 were from Hartford, 81 from New Haven, 80 from Springfield, 55 from Boston, 50 from Providence, 40 from Worcester, 12 from New Jersey, 10 from New York, 6 from Lehigh, 5 from Philadelphia, 4 from Chicago, 4 from Pittsburgh, 4 from Schenectady, 2 from Syracuse, 1 from Washington, 1 from Cleveland, and 1 from Detroit. Guests registered numbered 200.

Such a large attendance at the technical sessions could only be explained by the caliber of the speakers and the wide interest of their subjects. Those attending were well repaid. The meeting was opened by Henry J. Fischbeck, chairman of the Hartford chapter, and Mayor Batterson of the city gave an address of welcome. E. H. Cone, chairman of the New York chapter, then took over the meeting as technical chairman.

The first session was an illustrated address by E. W. Page of the General Electric X-Ray Corporation on "The Application of the X-ray in the Metal Industries". Mr. Page's talk was not only an interesting description of the successful application of the X-ray for research and foundry control, but was a challenge to makers of cast metal parts and welded structures to learn what effect their different practices make and to make use of scientific methods of control and inspection in place of rule of thumb methods.

Dr. Victor O. Homerberg, technical director of the Nitralloy Corp. and associate professor of physical metallurgy at the Massachusetts Institute of Technology, then addressed the meeting on the subject of "Recent Developments in Nitriding". He presented a thorough survey of these developments, and devoted considerable time to a discussion of improvements recently made in equipment as well as in procedure.

In one part of his paper Dr. Homerberg told how a high speed steel containing 0.74% carbon and 0.88% aluminum had been nitrided to 1400 diamond Brinell, the hardest nitrided case on record.

(Continued on Page Two)

NO REVIEWS DURING JULY AND AUGUST WHILE CHAPTERS REST

September Issue to Go to 60,000

Because of the usual cessation of the activities of A. S. S. T. chapters during the summer, the REVIEW will suspend publication during July and August. The September issue, as previously, will be extra large in size and will contain all available information on the National Metal Congress and Exposition which will be held in Boston, September 21-25.

The deadline of the June issue will be June 1 which will permit the publication of reports of all May chapter meetings.

More than 50,000 copies of the September issue of the REVIEW will be printed. In addition to A. S. S. T. members, copies will go to the membership of the American Welding Society, American Institute of Mining and Metallurgical Engineers and American Society of Mechanical Engineers. A large but selected list of prominent men in New England's manufacturing plants will also receive copies.

B.F. SHEPHERD TALKS STEEL'S PERSONALITIES AT MONTREAL

Addresses Meeting on March 23

By Duncan MacInnes

One of the most interesting lectures of the season before the Montreal chapter, was given on March 23, by B. F. Shepherd, chief metallurgist, Ingersoll-Rand Co., Phillipsburg, N. J., and director of the A. S. S. T. Mr. Shepherd presented his paper "Steel Personality" which was heard in February at the Western Metal Congress.

Mr. Shepherd pointed out that steels have a definite personality, and as a consequence uniform results do not always follow the uniform treatment of steels of similar composition. He pointed out that the purchase of tool steel with timbre, as one of the main specifications would result in an improved product.

The lecture was preceded by the showing of a motion picture film, "The Story of Compressed Air" by Alan McLean of the Canadian Ingersoll-Rand Co., Montreal. T. C. McConkey presided over the meeting.

SORRY! WE MADE A MISTAKE

The second "deck" of a headline on page 3 of the APRIL REVIEW contained a careless error. It referred to Dr. F. C. Langenberg as the 1931 Howe Medalist of the Society.

Dr. Langenberg, of course, did receive the Henry Marion Howe Medal for writing the most valuable technical contribution of the year, but that was in 1926. The medalist for this year will be chosen shortly before the Boston convention next September and will receive his award at the annual meeting.

METAL PROGRESS COUNSELLOR MOVES

A. M. Morse, Jr., eastern advertising counsellor of *Metal Progress*, has moved his office to 8 W. 40th St., New York City.

5463 A.S.S.T. MEMBERS MAY 1

A net gain in April of 310 members of the A. S. S. T. was recorded on the books when the total on May 1 was announced. On that day the list stood at 5463. A month before it was 5153. The standing of the chapters as of May 1 is:

1.

Chicago	496
Pittsburgh	418
Detroit	394
Cleveland	351
Philadelphia	324
New York	315
Boston	246

2.

New Jersey	277
Los Angeles	173
Golden Gate	152
Hartford	137
Lehigh Valley	135
Milwaukee	110
Montreal	108
Buffalo	101
Cincinnati	99
Canton-Mass.	82
St. Louis	78
Syracuse	74
Indianapolis	71
North-West	59
Dayton	52

3.

Ontario	114
New Haven	100
Tri-City	100
Worcester	81
Washington	80
Rochester	73
Rhode Island	69
Schenectady	67
Columbus	56
York	53
Rockford	48
Springfield	48
Southern Tier	40
Notre Dame	22
Fort Wayne	14

THE REVIEW

Devoted to the interests of the American Society for Steel Treating

A Review of the Activities of the Chapters and National Organization of the A. S. S. T.

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A LETTER FROM THE DETROIT CHAPTER

Editor, the REVIEW:

At a meeting of the Executive Committee of the Detroit chapter held January 16, 1931, a resolution was passed recommending that the National Board of Directors give very serious consideration to changing the method of representation used in electing National Officers. No special plan was recommended by which more equitable representation would be obtained except insofar as the voting power should be determined by proportional representation of members and not by chapters as it now is.

At an Executive Committee meeting held April 28th it was brought to our attention that there has been some tendency to consider the request of the Detroit chapter for more equitable representation as having a selfish motive. This is, of course, not at all true, and the Detroit chapter is primarily interested in the general good of the A. S. S. T. as a whole.

It was agreed that the Detroit chapter would be willing to support any change in the National Constitution which would limit the length of time during which any one chapter could have representation on the National Board of Directors in order that the representation on this board be distributed as widely as possible throughout the various chapters. Such a time limit would tend to prevent any one chapter or group of chapters dominating the control of the National Board of Directors.

At this last meeting of the Executive Committee of the Detroit chapter a resolution was passed instructing the Secretary to write this letter to the editor of the REVIEW and asking him, if possible, to publish it in the next issue.

Respectfully yours,
DETROIT CHAPTER,
H. W. McQuaid,
Secretary-Treasurer.

THE NEW YORK CHAPTER WRITES

Editor, the REVIEW:

The Executive Committee of the New York chapter have considered and discussed in some detail the changes in the constitution proposed by the Detroit chapter, the counter proposals of the Board of Directors and the proposal from Mr. Harrington of the Schenectady chapter regarding the Nominating Committee.

It seems as though the argument regarding the make-up of the nominating committee is the result of feelings by certain chapters that they have not obtained what they believe to be, their proper representation upon the Board of Directors and proper recognition in the Society. If the membership of the Board of Directors were increased from four to twelve elected members, besides the officers and past Presidents, and if these members each came from different chapters there would be a much wider and much more uniform representation on the Board, than at present and, we believe, less controversy in connection with the election of officers each year and less controversy and feeling during the interim between elections.

In this connection it is interesting to note that the American Society for Steel Treating operates with a smaller number on their Board of Directors than any of the other large technical Societies in this country.

We therefore suggest:

1. That a change be made in the voting power of members of the Nominating Committee in accordance with Mr. Harrington's proposal.
2. That the number of elected members on the Board of Directors be increased from four to twelve.
3. That four members of the Board of Directors be elected each year for a term of three years.
4. That nine members of the Board shall constitute a quorum for the transaction of business.
5. That no two members of the Board of Directors other than the officers of the Society shall represent a single chapter.
6. That except for officers and the past President no individual chapter shall be continuously represented on the Board for more than three years.
7. That the President, Vice-President and Treasurer of the Society shall be chosen from those members of the society who have been members of the Board of Directors at some time or other for at least two consecutive years.

Under the above arrangement the Board of Directors should consist of twelve elected directors, the past President for one year, the President, the Vice-President, the Secretary and the Treasurer of the Society, making a total of seventeen members. At least twelve chapters would always be represented on the Board of Directors and since no one chapter could be represented for more than three consecutive years there would be a continual shifting of chapters with representation.

In view of the fact that the original proposition from the Detroit chapter, the counter proposal of the Board of Directors, and Mr. Harrington's proposal have all been published in the REVIEW it is believed by the Executive Committee of the New York Chapter that the proposal here made should be so published and such publication is accordingly requested. Comments from the various chapters and members are solicited.

Very truly yours,
NEW YORK CHAPTER,
T. N. Holden,
Secretary.

BUFFALO HEARS R. H. ABORN

Likes X-Ray Fundamentals Talk

By Charles F. Wahl

On Thursday, March, 26 the Buffalo chapter held its regular meeting at Hotel Buffalo.

Chairman H. J. Cutler called the meeting to order and introduced Bill Eisenman, national secretary, as guest.

Mr. Cutler then introduced the technical speaker of the evening Dr. Robert H. Aborn, of the research department of the United States Steel Corp., Kearney, N. J., who spoke on the fundamentals of "X-Rays."

Dr. Aborn explained clearly and interestingly the X-Ray equipment, that is now availble for making crystal studies of metals and how X-Rays are produced. The use of X-Rays for metallurgical testing may be considered in two classes, radiographic and diffraction X-Rays tell us about crystals and arrangement of atoms.

The X-Ray will show defects in steel, which the microscope does not reveal, such as cracks, shrinkage, blow-holes, inclusions and soundness of metals.

TRI-CITY STUDIES CUTTING

W. A. Oldacre Addresses Meeting

By Garnet Phillips

An extremely interesting talk on "Cutting and Cutting Compounds" was given by W. H. Oldacre at the April meeting of Tri-City chapter of the American Society for Steel Treating.

Mr. Oldacre, who is director of research and engineering of D. A. Stuart & Co., Chicago, discussed the theory of cutting metals with tools pointing out that immense pressures develop on the tool and that a large amount of heat is generated.

The problem of economically machining the variety of steels in use today has been partially solved by employing proper cutting compounds, resulting in longer tool life, higher production and better finish.

It has been found that highly sulphurized oils (up to 10.0 per cent effective sulphur) are best for tough, stringy steels machined at slow speeds while oils with low sulphur content are best for free cutting materials such as screw stock machined at high speeds.

SHOWS HOW ALLOYS AFFECT TOOL STEEL

J. P. Gill's Talk at Detroit's April Meeting is Applauded

By O. W. McMullan

The April meeting of the Detroit chapter was held on April 13. The speaker was J. P. Gill, chief metallurgist of the Vanadium Alloys Steel Co. His subject was "Tool Steels: Chemical Composition and Selection."

The carbon content is of first importance. Sulphur is kept under .03% but has been accepted up to .05%. It produces red shortness if manganese is not high enough to prevent formation of FeS in the grain boundaries. Phosphorus produces cold shortness and as much as .04% has been proved definitely detrimental. Silicon under 1% dissolves in the ferrite and raises the critical temperature. It embrittles high carbon steel. Manganese lowers the critical temperatures and causes steel to coarsen at high temperatures.

Nickel is not used in ordinary tool steels but is used in some die blocks. It also lowers the critical range and dissolves in iron in all proportions. It makes annealing difficult. Chromium both dissolves in ferrite and forms carbides. It opposes breaking up of cementite and chromium steels must therefore be soaked longer at heat. It is used in percentages of .5 to 20 in tool steel.

Vanadium forms carbides and partially dissolves in ferrite. It makes the steel fine grained and permits higher hardening temperatures. Tungsten is a carbide former and has no influence on the physical properties if carbon is absent. From .5 to 20% of tungsten is used in tool steels. Molybdenum acts like tungsten but more than 3% volatilizes during forging. Its use is mostly in die steel and it is the most effective element in producing air hardening.

A number of slides were presented showing many different analyses and their suitability for varied applications.

Combinations of elements influence each other. Chromium in low tungsten steel helps dissolve the carbon and causes easier hardening. High carbon high chrome steels lack toughness.

Tungsten in high speed steels increases cutting ability and brittleness. Eighteen per cent gives the best balance between these tendencies. Vanadium increases the cutting efficiency but increases the cost, 1% being the economical limit. Cobalt decarburizes the steel in proportion to the carbon content, increases brittleness, and decreases hardness but if properly used this type will out perform all other types of high speed steel. The 14-4-2 (tungsten-chrome-vanadium) type is very sensitive to grain growth but has good properties if treated right.

BUFFALO MEN HEAR STEEL MAKING TALK

Dr. G. B. Waterhouse Recounts Past, Present of the Science

By Charles F. Wahl

The Buffalo chapter held the eighth regular meeting at Hotel Buffalo on April 23 with twenty-five members and guests at dinner and about one hundred attended the meeting.

Chairman H. J. Cutler introduced the speaker of the evening, Dr. George B. Waterhouse, professor of metallurgy at Massachusetts Institute of Technology, who spoke on "Steel Manufacturing."

Some of the important methods of steel manufacturing are the crucible, acid bessemer, basic open hearth and basic electric. The oldest is the crucible process which is now superseded by the high frequency electric furnace. Acid bessemer steel made in the converter is superior for automatic machines for certain requirements and for 12% manganese steel.

In 1929, fifty-six million tons of ingots were produced of which forty-five million tons were made in the basic open hearth furnace. The following fuels are used: producer gas, natural gas, fuel oil, tar, and electricity. Powdered coal is not used very much in melting steel. The basic open hearth furnace predominates because of the flexibility and ability to carry out reactions in "steel making" and another advantage is the tilting type where several grades of steel can be made from one heat. The tonnage of furnaces ranges from ½ ton to 350 ton capacity.

Dr. Waterhouse illustrated his talk with a very excellent set of slides, showing mechanical features of open hearth furnaces in this country and Europe.

BUDD CO. PROMOTES 2 A. S. S. T. MEN

Dr. George L. Kelley, formerly chief metallurgist of the Edward G. Budd Manufacturing Co., Philadelphia, has been made managing director of the company's auto body plant in England. Joseph Winlock has been promoted to chief metallurgist in his place.

NEW JERSEY HEARS AUTO GEARS TALK

John F. Wyzalek Tops List of Officers Elected for 1932

By D. H. Sheridan

The regular monthly meeting of the New Jersey chapter was held at the Berwick Hotel in Newark, N. J., on April 7.

The results of the balloting for our new officers were announced. Those elected were John F. Wyzalek of the Hyatt Bearings Div. of the General Motors Corp., chairman; Alexander McWilliams of the McWilliams Forge and Steel Co., vice-chairman; Richard W. Thorne of the Colonial Steel Co., treasurer; and John W. Johnson of the Firth-Sterling Steel Co., secretary.

Preceding the speaker of the evening a movie entitled the "Story of the Gasoline Motor" was shown. It was a most instructive and interesting bit of entertainment.

Fred C. Raab, our speaker, was then introduced. Mr. Raab is metallurgical engineer of the Brown-Lipe-Chapin Div. of the General Motors Corp. He outlined some of his troubles in the carburizing and hardening of gears and advanced methods of overcoming same. He stated that trouble was experienced with seams and pipe in billets used in forging gears but by using a satisfactory etch test, the elimination of this condition was accomplished.

To overcome certain machining difficulties with steel of a very low silicon content the silicon was raised to 0.15-0.25 and the trouble ceased. Machining was also difficult another time. It was caused by the carburizing action of the oil used as fuel in furnace heating slabs and billets for forging.

Another interesting point made by Mr. Raab was the means of eliminating trouble in heat-treatment due to soft skin on the surface of carburized gears, particularly, those of high nickel type. The decarburization was caused by the presence of CO gas in the pots as the gears were slowly cooling in the tightly sealed pots. This trouble was remedied by building a flue within the pot which would allow oxygen to unite with the CO gas thus changing it to CO_2.

Mr. Raab's talk gave rise to considerable discussion and questioning.

SPRINGFIELD LIKES CHROME STEEL TALK

F. R. Palmer Presents Complete Story of Stainless Steels

By Geo. H. Glynn

A large gathering was on hand the evening of March 23, for the monthly meeting of the Springfield chapter. The ever interesting topic "Corrosion Resisting Steels" was ably presented by Frank R. Palmer, assistant to the president of the Carpenter Steel Co.

Mr. Palmer presented the picture of stainless steels from the beginning up to the point where the salesman calls and recommends certain steels for specific purposes. He explained that steels exhibit stainless properties due to very definite chemical reasons. The chromium content bears a direct relationship to the carbon percentage and this proportion and a small additional percentage for galvanic action must be fulfilled before the steel is stainless.

Stainless steels were divided into three general classes, based on their chemical composition and physical properties regardless of trade names or brands. The three groups have little in common except the fact that "they are all steels containing chromium and all of them have corrosion or heat-resisting properties of some type or another."

While all the steels in a certain group bear a general resemblance to each other, the exact properties of the individual members of the group will vary according to their chemical composition.

The discussion following the meeting centered around the machinability of stainless. Mr. Palmer mentioned the modified type of stainless containing zirconium sulfide which machines like bessemer screw stock.

BIG JOINT MEETING IS GREAT SUCCESS

700 Men Gather at Hartford For Program on April 14

(Continued from Page 1)

Both technical papers proved very popular, but the imminence of lunch time prevented general discussion.

After luncheon twenty busses conveyed the plant inspection groups to the Pratt & Whitney Co. Those in each bus were kept in one group and each group led by two guides was presented with carnations by girls of the Pratt & Whitney Co. to serve as a group identification. Machining and heat treating procedure and equipment was carefully explained to the visitors, all of whom were greatly interested.

From the Pratt & Whtiney Co. the busses were conducted by state police escort to the plants of the Chance Vought Corp. and the Pratt & Whitney Aircraft Co. which are adjacent to each other. Both plants are the latest word in their fields.

Parties conducted through the Chance Vought plant saw the painstaking work in constructing the wing frames with perfect pieces of plywood and spruce, every piece of the size, and in the position to give the maximum strength with least weight.

In the Pratt & Whitney Aircraft Co. plant small groups under competent guides were shown the two production lines, one handling iron and steel parts, the other non-ferrous metal parts for the "Wasp" and the "Hornet" aircraft motors. From the store rooms, where the raw materials are carefully piled and identified, through all the processes there is an orderly flow of parts and materials all carefully identified.

Later, after a very good steak dinner served in the ball room of the Hotel Bond, Chairman Henry J. Fischbeck expressed his appreciation of the work done by the committee on arrangements headed by D. A. Nemser and for the excellent co-operation of the committee representatives from the out-of-town chapters, Lester Hawkridge, Boston; Charles Baker, Rhode Island; M. H. Fromman, Worcester; M. K. Epstein, Springfield; and Fred G. Dawless, New Haven.

Frank P. Gilligan, toastmaster, introduced representatives from the plants visited: O. Stephenson, Chance Vought Corp.; Frank O. Hoagland, Pratt & Whitney Co.; and Ben H. Gilpen, Pratt & Whitney Aircraft Co., who gave a few words of welcome and appreciation of the interest shown. J. M. Watson, president of the A. S. S. T., C. B. Whittlesey, executive vice-president of the Hartford Chamber of Commerce, and W. H. Eisenman, secretary of the A. S. S. T., gave a few remarks.

Dr. Zay Jeffries, speaking on the "Metallurgist in Industry", gave an inspiring picture of the accomplishments of the past and the bright prospects of the future. Dr. Jeffries is as fine an after dinner speaker as he is a metallurgist. His talk brought to an appropriate end a great day in New England A. S. S. T. history.

ALLEGHENY STEELS RENAMED

The Allegheny Steel Co. has taken a step to end the confusion prevalent in the alloy field as a result of the large number of trade names used. Effective immediately, this company will use the name Allegheny in connection with all its products. The whole group of chromium and chromium-nickel alloys made by the company will be known as "Allegheny Alloys."

The name of Allegheny Metal, the 18 and 8 alloy, will remain unchanged, but the alloys hitherto bearing the name of Ascoloy hereafter will be known as Allegheny 33, 44, etc., using the same differentiating numerals that are now used with the word Ascoloy.

The action of the Allegheny Steel Co. came following a survey which developed the fact that there were 104 different trade names in the alloy field in this country.

DEMONSTRATES IN NEW WAY

C. I. Hayes, Inc., Providence, R. I., is conducting a series of public working demonstrations of its electric heat treating furnaces in various cities of the country. Detroit and Cleveland have already been visited, and other cities will be included in the itinerary.

The demonstration equipment includes two box-type Hayes furnaces equipped with all regular features. Quenching facilities are also provided. Manufacturers are invited to make test treatments of their work without any cost to themselves. So far many heat treating problems have been brought to the demonstration rooms.

NEW JERSEY ENDS COURSE IN METALS

Average Attendance of 80 at Each of Eight Lectures

The New Jersey chapter of the A. S. S. T. has recently concluded a valuable and popular course in heat treatment, metallography and use of iron and steel.

This course was designed to present the fundamentals of the industry to the layman in such a manner that he will be in a better position to grasp the knowledge to be gained from the papers which are presented at the regular monthly meetings of the chapter.

Educational authorities of both the State of New Jersey and the City of Newark extended their support to the chapter's Educational Committee by providing a classroom in the Essex Vocational School, with facilities for motion picture projection for use by the students attending the lectures. The students were also given access to the excellent heat treating and metallurgical laboratory facilities.

The course consisted of a series of eight lectures which were held on each Friday evening for a period of eight weeks, beginning on January 16 and ending on March 6, 1931. The Educational Committee consisted of E. L. Roff and E. S. Davenport.

The committee was successful in obtaining a recognized authority for the presentation of each subject. Their efficiency in this respect is evidenced by reference to the following list of subjects and the speakers presenting them:

1. The Manufacture of Iron and Steel from Ore to Ingot, by Dr. W. R. Frazer, Eclipse Aviation Corp., East Orange, N. J.
2. Mechanical Workings of the Ingot to Finished Shapes, by H. S. Wolf, Alan Wood Steel Co., Conshohocken, Pa.
3. The Metallurgical Microscope and the Microstructure of Iron and Steel, by J. R. Vilella, Union Carbide and Carbon Laboratories, Long Island City, N. Y.
4. Heat Treatment of Steel, by M. J. R. Morris, Republic Steel Corp., Massillon, Ohio.
5. Physical Testing, by Dr. K. Heindlhofer, U. S. Steel Corp. Research Laboratory, Kearny, N. J.
6. Alloy Steels, by Dr. A. B. Kinzel, Union Carbide and Carbon Laboratories, Long Island City, N. Y.
7. Furnaces and Pyrometry, by H. Heyn, Surface Combustion Co., Toledo.
8. Cast Iron—Its Metallurgy and Uses, by F. B. Coyle, International Nickel Co., New York.

The enthusiastic manner with which this course was received is clearly shown by a recorded average attendance of eighty students at each lecture.

The officers and executive committee of the New Jersey chapter have made a survey of the needs of their members in this district, and have formulated plans for educational courses in metallurgy which will be offered periodically.

PHILADELPHIA MEN LEARN TOOL STEEL

Harold Wills Speaks at April Meeting on Production, Use.

By Adolph O. Schaefer

Harold Wills, metallurgist of the Ludlum Steel Co., Dunkirk, N. Y., started a lively discussion at the eighth regular meeting of the Philadelphia chapter following the delivery of his paper on "Satisfying the Tool Steel Customer."

The paper was an up-to-date and interesting discussion of the tool steel business from the producer's standpoint. Mr. Wills reviewed the histories of the developments of the various standard types of tool steel used to-day. He spoke of their particular uses, and the care needed in their subsequent treatment. Considerable time was spent in telling of the problems of inspection and testing.

A series of well chosen slides presented, besides pertinent data on the treatment of tool steels—a dozen or so examples of tool failures and the ways in which these failures were corrected.

It was this last part of the talk that gave Mr. Mochel his cue for conducting the discussion. The meeting was quickly divided into producers and consumers. With the house divided but friendly, many were able to get some real help from airing their problems.

The meeting was held on April 24 at the Engineers' Club.

A New Jersey Chapter Course Class

An interested group at one of the lectures in the course in metals sponsored this past spring by the New Jersey chapter. Average attendance at each meeting was 80.

CLEVELAND MEN SEE BIGGEST DIRIGIBLE

Over 15 Visit Rubber Plant and Airship Hangar in Akron

By W. E. Benninghoff

For the April 13 meeting the Cleveland chapter, A.S.S.T., met in the afternoon at the Goodyear Hangar in Akron, Ohio, where 175 members and guests inspected the hangar and the new Navy dirigible. One of the guides entertained the group with a graphic word picture of the hangar and the ship, even telling how many gallons of paint were necessary to paint one of the letters in the sign outside the hangar.

The Goodyear Plant No. 2 was next visited, where we saw the manufacture of tires from the mixing of the rubber to the painting of the Goodyear flag on the tire.

About 100 members and guests then sat down to dinner in the Goodyear restaurant, at which place we held the regular meeting. Chairman Ayling introduced Paul Ffield of the Goodyear organization and a member of the Cleveland chapter, who spoke on "Materials Used in Zep Construction."

Mr. Ffield stated that the requirements of metals used in this type of work were high yield point, good elongation, good corrosion resistance, ease of working and they should further be strong and light. Alloys of aluminum met these requirements according to Mr. Ffield, and he then told us of the development of aluminum alloys and the effects of cold working, showing the increase in physical values to what we have today. The average values of the alloys being used on the ship are 47,200 lbs. per sq. in. yield, 62,000 lbs. per sq. in. tensile and 15.6% elongation.

The materials used in the manufacture of the gas tanks, the sheet for joining girders, the tubing for engine outriggers and support struts, die castings, pin joints, gas line fittings, exhaust manifolds, wire braces, mooring spindle and so on, were all discussed in detail along with data on why the material selected was used.

In the question period following the talk, Mr. Ffield told us some of the history of the English ships as well as the salient features of the anodic treatment of aluminum.

NOTRE DAME LEARNS FUNCTION OF AUTOMOBILE METALLURGIST

Studebaker Executive Speaks

By H. Bowlus

The April meeting of the Notre Dame group was held in the evening of April 17, in Chemistry Hall at Notre Dame.

The group was fortunate in securing as the speaker, W. J. Harris, chief metallurgist of the Studebaker Corp.

Mr. Harris chose as his subject "The Function of the Metallurgist in the Automotive Industry." He traced the part that the metallurgist plays in the development of a new product from the drawing board to production. He also discussed some of the typical problems which the metallurgist may expect to be called upon to solve in the routine of plant operation.

In a short business meeting, the proposed amendments to the by-laws of the group were read for the second time, and now stand accepted.

WILLS TELLS WORCHESTER OF THE 6 TOOL STEEL CLASSES

Members Like March Meeting

By R. C. Jordan

On March 26, W. H. Wills, metallurgist of the Ludlum Steel Co., spoke to the Worcester chapter on the subject of tool steel.

About 40 members and guests enjoyed a dinner at Rebboli's Restaurant while about 15 more came after the dinner to listen to the speaker.

Mr. Wills classified tool steels into six groups, describing the analyses and properties of each group. Several of the principal lines of industry were then taken up and their tool steel applications discussed. Among these were included the steel industry including rails, sheet, wire and tube mills and also structural steel fabricating plants.

He also discussed applications to foundries and forge shops, screw and bolt manufacturing plants, metal stamping and the automobile industry.

Several interesting lantern slides were shown to illustrate points in the discussion.

WROUGHT IRON TALE IS TOLD TO BOSTON

Dr. James Aston of Byers Process Fame, Addresses Big Meeting

By Howard E. Handy

Speaking to about 100 members and guests of the Boston chapter, Col. Tracy C. Dickson, commandant of the Watertown Arsenal, gave an interesting coffee talk on April 3.

Taking as his subject "The Manufacture of Big Guns," he outlined briefly the history of the development of cannon and guns in America and then discussed in detail the method of cold-working the gun bore as employed at the Watertown Arsenal. Col. Dickson was enthusiastically received, many of those present having worked under his direction sometime during his many years at the Arsenal.

The guest speaker of the evening was Dr. James Aston, consulting metallurgist of the A. M. Byers Co. and director of mining and metallurgy at Carnegie Institute of Technology, Pittsburgh, who presented an illustrated talk on the "Byers New Process for Manufacturing Wrought Iron."

Dr. Aston discussed the history of the manufacture of wrought iron from the earliest times and explained the characteristics and properties of this important metal, the demand for which for certain purposes still persists in spite of its greater cost than steel. After describing the various attempts at mechanical puddling, he showed two reels of motion pictures illustrating the various stages of the Byers New Process and then showed a number of slides taken at the A. M. Byers new plant at Ambridge, Pa. About 175 members and guests were present.

As the next meeting will be the Annual Meeting, the names submitted by the Nominating Committee for next year's officers were read during the business section. These names, together with any others which may be presented, will be balloted on at the May 1st meeting which will be held at the Beverly Plant of the United Shoe Machinery Corporation.

CLEVELAND, CANTON MEN JOIN APRIL 7

Visit Two Canton Plants and Hear Talk on Corrosion

By R. G. Roshong

The Cleveland and Canton-Massillon chapters met on April 7 to make an inspection of the modern plants of the Canton Drop Forging and Manufacturing Co. and the Hercules Motor Corp., both of Canton. Many new and interesting developments were observed by the members in these plants. Following the inspection, dinner was served to eighty-five members and guests at the Courtland Hotel and over one hundred were present at the technical session on "Corrosion" which followed the dinner.

Dr. C. F. Rassweiler, assistant director of the Central Laboratory of Du Pont de Nemours & Co., assisted by W. R. Huey, metallurgist of the same company, presented the talk on "Corrosion." Mr. Huey first presented some facts concerning the metallurgical aspect of corrosion of ferrous metals, explaining the electrochemical theory, the effects of aerated waters and mill scale.

Dr. Rassweiler then presented means for combating the more familiar types of corrosion. He pointed out that consumers of paints and protective materials had constructively changed their attitude in specifying these materials and were now specifying performance tests, which were far more effective.

The chief requirements of a satisfactory paint or lacquer film are that it must be impermeable, non-cracking and have satisfactory adhesion. Dr. Rassweiler then explained the superior properties of newly developed paint vehicles made from synthetic resins which have made possible greater protection against atmospheric corrosion. It was also explained that various types of pigments have a definite effect on the protection against corrosion when using the same paint vehicle.

A method of producing separable paint films on tin plated steel, amalgamated with mercury, was demonstrated before the group. Test panels, coated with various types of varnishes, lacquers and paints made from synthetic resins which had been exposed to various atmospheric conditions, were displayed to show the merits of the various paint vehicles. The talk presented by Dr. Rassweiler was interestingly different from those usually presented before the Chapter and many interesting discussions followed his talk.

DEATH CALLS ST. LOUIS EXECUTIVE

The St. Louis chapter has regretfully announced the very sudden death of its vice-chairman, Edward Pendergast. Mr. Pendergast was for a long time a member of the A. S. S. T. and for 35 years was connected with the Schroeter Bros., Hardware Co. of that city.

DR. JEFFRIES TELLS METALS' IMPORTANCE

Chicago Men Learn 93% of New Metal Produced is Iron

By Harry B. Knowlton

Dr. Zay Jeffries was the speaker at the regular meeting of the Chicago chapter April 9. The announcement that he was to be the speaker brought out nearly 300 members and guests. The Chicago chapter always considers itself fortunate when it can hear Dr. Jeffries. It is needless to say that no one was disappointed this time.

The subject of the address was "The Metallurgist in Industry". The subject was handled as can be done by a man with Dr. Jeffries' breadth of vision, coupled with an ability for keen analysis and philosophical reasoning. In one short hour he gave us a bird's-eye view of the whole field of metallurgy as it is today and as it probably will be in the future and stressed the way in which we should work and the goals we should strive to attain.

In the beginning he brought out the importance of the various branches of metallurgy in our present civilization, showing how each part performed an important and necessary function. Of new metal produced annually, about 93% is iron and the iron alloys, and yet some of the metals which are produced in relatively small amounts only play a very important role. Only a small fraction of 1% of human labor is employed in the production of gold, and yet that metal serves as the basis of credit for the civilized world. Tungsten with a production of only 10,000 tons of tungstic oxide a year has brought about enormous savings in the cost of lighting.

Dr. Jeffries recommended that each producer of metals and alloys endeavor to develop his material for as many purposes as possible, and that the user should select the material which was the best for his needs, perhaps even demanding the production of a new type of alloy if necessary. The result of such a program would be progress.

The metallurgist was cautioned to remember that the world depended upon him to build integrity into the product. Human safety frequently depends upon the judgment of the metallurgist. At the same time he should consider all factors, including costs. He is not justified in using a material that is better than necessary for the job if its use involves a much greater cost.

The lecture was followed by a long discussion covering many subjects in and out of the field of metallurgy.

BUCKINGHAM AT BALDWIN-SOUTHWARK

Francis Buckingham has become associated with the Baldwin-Southwark Corp., Philadelphia, as sales engineer of testing machinery and equipment.

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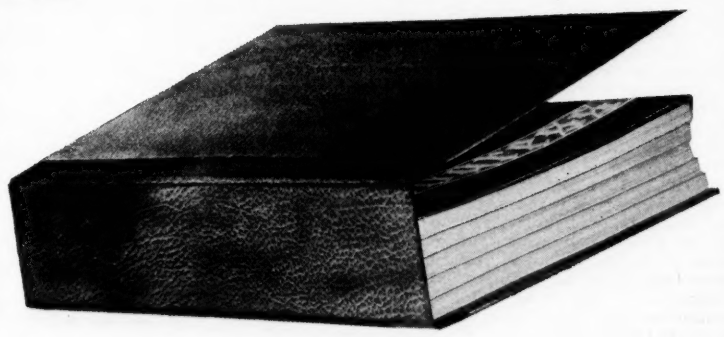

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AUDITORS' REPORT OF SOCIETY BOOKS

Given below is balance sheet and operating statement as presented by Ernst and Ernst after an audit of the Society books as of December 31, 1930.

BALANCE SHEET

AMERICAN SOCIETY FOR STEEL TREATING—CLEVELAND
As of the close of Business December 31, 1930

ASSETS			
CASH			
ON HAND			
Petty Cash and undeposited receipts		$ 2,167.50	
ON DEPOSIT			
Savings account	$32,526.38		
Commercial account	1,757.43	34,283.81	$ 36,451.31
SECURITIES (at cost)			
U. S. Government securities	$27,689.70		
Other securities	99,196.38	$126,886.08	
Accrued interest		1,779.58	128,665.66
ACCOUNTS RECEIVABLE			
Advertising	$ 8,288.52		
Miscellaneous	2,068.86		
Chicago Convention	830.50		
Cleveland Convention	252.35	$ 11,440.23	
Less: Allowance for doubtful		1,000.00	10,440.23
INVENTORY (certified by management)			
Bound volumes of "Transactions", paper stock, bound and unbound publications, etc.			13,371.03
OTHER ASSETS			
Employees' accounts, travelling advances, postal deposits, etc.			2,131.34
PERMANENT (book value)			
Office furniture and fixtures			4,894.00
DEFERRED			
Prepaid expense—1931 shows, etc.		$ 12,872.23	
Unexpired insurance premiums		436.34	13,308.57
			$209,262.14
LIABILITIES			
ACCOUNTS PAYABLE			
For purchases, expenses, etc.		$ 3,195.70	
Bank ovedraft		4,398.80	
For apportionment of dues to chapters		573.50	
Members' credit balances, etc.		238.46	$ 8,406.46
RESERVES			
For Conventions		$ 20,000.00	
For contingencies		20,000.00	
For H. M. Howe medal fund		5,000.00	
For general index		400.00	45,400.00
DEFERRED INCOME			
Conventions		$ 13,820.00	
Bound "Transactions"		1,573.75	15,393.75
SURPLUS			140,061.93
			$209,262.14

R. C. FLEMING IN NEW YORK

Is Midwestern Representative for the Riehle Bros. Testing Machine Co.

R. C. Fleming has been named special midwestern representative for the Riehle Bros. Testing Machine Co., Philadelphia.

R. C. Fleming

Mr. Fleming is a member of the Chicago chapter of the Society, and was formerly employed as assistant chief metallurgist at the plant of the Wyman Gordon Co., in Harvey, Ill. He was also associated with the Link Belt Co., Indianapolis, for an eight year period. He first joined the A. S. S. T. in 1927, and has been active in chapter affairs.

Mr. Fleming has established headquarters at 127 North Dearborn St., in Chicago.

LOS ANGELES HOLDS TWO GOOD MEETINGS

Hears Tubing Talk in March; Safety Discussion in April

By James H. Spade

The Los Angeles meeting in March followed a dinner which was attended by 90 members and guests. The meeting was attended by approximately 115 members and guests.

The program of the evening consisted of an illustrated lecture on the manufacturing of steel tubing, delivered by Eric Barnett, sales engineer of the Columbia Steel Corp. of California.

The films used were procured through the courtesy of the National Tube Company, and consisted of six reels.

Mr. Barnett's method of handling his subject was intensely interesting and instructive, and the favorable comments from those in attendance indicated that the films produced by the National Tube Company were outstanding among industrial films—in their clearness and the detail which they were intended to convey.

The April meeting was held on the 9th in the dining room and auditorium of the Los Angeles Gas & Electric Company, and was attended by approximately 100 members and guests.

The program of the evening was furnished by Prof. W. Howard Clapp of the California Institute of Technology of Pasadena. Prof. Clapp took as his subject "Factor of Safety in Design".

The above title may indicate that the subject had to do principally with the calculation of safety factors and strengh of materials. This is true, but the subject as handled by Mr. Clapp went a great deal further, and included some of the laws and principles governing the flow of metal under stress for ductile materials, and the absence of flow for brittle materials, thereby bringing the discourse into the higher realm of metallurgy.

The discussions which followed the lecture occupied fully as much time as the lecture itself, and could be taken as an indication of the great interest which was developed among the members on the subject—not to mention the favorable comments by those present.

The Pittsburgh office of the Molybdenum Corporation of America has been moved to 2911 Grant Bldg., 4th Avenue and Grant Street, Pittsburgh.

INCOME AND EXPENSE

AMERICAN SOCIETY FOR STEEL TREATING—CLEVELAND
For the year ended December 31, 1930

INCOME			
MEMBERSHIPS		$ 68,502.32	
Less: Apportionment to chapters		29,656.64	$ 38,845.68
Sustaining exhibit memberships			4,125.00
CONVENTIONS			
Chicago			$ 85,722.75
PUBLICATIONS			
Transactions		$ 47,271.94	
Metal Progress		25,425.00	
National Metals Handbook		9,403.85	
Books Published		7,047.31	
Books purchased and resold		1,241.22	
Other publications		20.40	
GROSS INCOME FROM PUBLICATIONS			$ 90,409.72
EXTENSION DIVISION			$ 14,632.00
OTHER INCOME			
Interest Earned			$ 8,709.48
Discount Earned			1,076.71
Miscellaneous			321.04
TOTAL INCOME			$243,842.38
EXPENSE			
Chicago			$ 71,036.34
PUBLICATIONS			
Transactions		$ 36,594.20	
Metal Progress	$65,915.62		
Less: Charged to surplus	30,000.00	35,915.62	
National Metals Handbook		10,711.39	
Books published		3,900.93	
Books purchased for resale		1,000.94	
Other Publications		4,287.80	
TOTAL PUBLICATION EXPENSE.			$ 92,410.88
EXTENSION DIVISION			$ 11,439.27
EXECUTIVE OFFICE EXPENSE			
DIRECTORS			
Traveling		$ 3,045.99	
Miscellaneous		156.00	$ 3,201.99
PRESIDENT			
Traveling		$ 1,039.41	
Miscellaneous		36.50	$ 1,075.91
TREASURER'S OFFICE			
Salaries—Executive		$ 3,900.00	
Salaries—Office		1,800.00	
Professional services		860.25	
Traveling		117.34	
Miscellaneous		4.87	$ 6,682.46
SECRETARY'S OFFICE			
Salaries—executive		$ 9,700.04	
Salaries—office		4,971.86	
Traveling		3,613.08	
Entertaining		1,363.50	
Dues and subscriptions		968.63	
Miscellaneous		102.03	$ 20,719.14
GENERAL			
Rent		$ 3,600.00	
Postage		3,577.02	
Office supplies and stationery		3,189.62	
Depreciation		1,223.48	
Telephone and telegraph		987.59	
Insurance		568.01	
Discount allowed		856.62	
Professional services		734.88	
Miscellaneous		62.00	$ 14,799.22
OTHER EXPENSES			
Recommended Practice			$ 3,523.20
National committees			1,427.49
Semi-annual meeting			1,228.17
Support of chapters			615.36
E. D. Campbell memorial lecture			500.00
H. M. Howe medal fund expense			25.00
Loss on securities sold			4,263.99
Bad accounts			736.89
Miscellaneous			283.20
TOTAL EXPENSE			$233,968.51
EXCESS INCOME OVER EXPENSE			$ 9,873.87

TELLS PRESENT AND FUTURE OF QUENCHING

Talk At Southern Tier by F. R. Palmer Creates Discussion

By W. S. Bennett

The April meeting of the Southern Tier chapter was held on the 20th. An inspection trip of the Ingersoll-Rand Company's plant preceded the dinner at the Jenkins Inn in Waverly.

A technical discussion entitled "Mysteries of Quenching" was presented by F. R. Palmer of the Carpenter Steel Co., Reading, Pa., and dealt with the effect on the properties of steel of various methods of cooling or quenching after the heat treatment.

Mr. Palmer stated that tremendous forces are set up in a piece of steel by the succeeding expansion and contraction of the several phases which are its component parts. These internal forces are often very nearly equal to the elastic load limit of the steel and if they are exerted in the proper direction have the effect of rendering it almost twice as strong for its own special job. Of course the converse is also true, and if the quenching strains are in the wrong direction the steel may be practically useless for a given job.

The speaker also pointed out how in some cases these forces could be measured and controlled, the method of control being to quench the spot or area toward which you want the internal forces to be directed. Mr. Palmer believes that the future will see the development of quenching apparatus to accomplish this task of cooling the various parts of a heat treated piece of steel in the proper sequence and that this field holds greater promise for the development of superior steel products than even the development of alloy steels.

The talk was illustrated with slides and a special apparatus was used to demonstrate that within the elastic limit, steels, regardless of composition or heat treatment, will deflect the same amount if placed under the same load.

There was considerable discussion of methods of quenching various steel shapes following Mr. Palmer's talk.

ALUMINUM 44% OF AIRCRAFT MOTORS

H. J. Fischbeck Tells This to Washington-Baltimore Men

By Leo J. Waldron

The April 17 meeting of the Washington-Baltimore chapter was held in Washington. The usual informal dinner in honor of the speaker was served at the Madrillon Restaurant.

Following the dinner, members and guests met at the Interior Building where H. J. Fischbeck, chief metallurgist of the Pratt & Whitney Aircraft Corp. spoke on the subject of aircraft metallurgy.

Mr. Fischbeck's interesting talk consisted of the following points: A resume of some of the early aircraft engines, features and advantages of the fixed radial engine, manufacture of the Pratt & Whitney engines, materials of construction and methods of final testing.

Recent developments in aluminum have made possible its use in motors to the extent of some 44% with 48% steel and the remainder metal nonferrous. The thorough inspection of raw, semi-finished and finished machine parts is very complete and has helped greatly toward maintaining a small failure of engines in service.

The present trend in engine design and construction is toward smoother operation of motors, increased power, and a reduction in oil and gas consumption.

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Mahr Manufacturing Co., Minneapolis, Minn.

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Address answers care of A. S. S. T., 7016 Euclid Ave., Cleveland, unless otherwise stated.

POSITIONS WANTED

CHEMICAL ENGINEER and metallurgist, university graduate; three years' laboratory and plant experience in ferrous foundry. Location immaterial. Address 5-5.

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For Sale: Leitz Micro-Metallograph

We have available at a very attractive price, a slightly used Leitz Micro-Metallograph of recent design, complete with all accessories, guaranteed to be in perfect working condition. Address 4-10.

SALES REPRESENTATIVES

Wanted by conservative firm manufacturing full line of carburizing and metallurgical materials. Only men who have wide acquaintance and following considered. Commissions only. Please state territory covered and record. Address 2-10.